

What is claimed is:

1. A method of identifying an immunologically active antigen of a virus that attacks skin comprising:
 - (a) obtaining peripheral blood mononuclear cells (PBMC) from a subject infected with the virus that attacks skin;
 - (b) isolating lymphocytes from the PBMC of (a) that express cutaneous lymphocyte-associated antigen (CLA);
 - (c) identifying a CLA-positive lymphocyte from (b) that selectively kill cells infected with the virus that attacks skin;
 - (d) determining the identity of the antigen present in the lymphocyte identified in (c);

whereby the antigen whose identity is determined in (d) is the immunologically active antigen of the virus that attacks skin.
2. The method of claim 1, wherein the virus that attacks skin is a herpes simplex virus (HSV), a human papilloma virus (HPV), a pox virus, or a varicella zoster virus (VZV).
3. The method of claim 1, wherein the isolating of step (b) further comprises isolating lymphocytes that express CD8 in addition to CLA.
4. The method of claim 1, wherein the isolating of step (b) further comprises isolating lymphocytes that express CD28 in addition to CLA.
5. The method of claim 1, wherein the identifying of step (c) comprises a chromium release cytotoxicity assay to identify lymphocytes that selectively kill cells infected with the virus that attacks skin.

6. The method of claim 1, wherein the determining of step (d) comprises expression cloning.
7. A pharmaceutical composition comprising a herpes simplex virus (HSV) polypeptide, wherein the polypeptide comprises an epitope identified by the method of claim 1, and a pharmaceutically acceptable carrier.
8. The pharmaceutical composition of claim 7, wherein the polypeptide comprises a UL7, UL25, UL26, UL46, US6 or US8 polypeptide.
9. The pharmaceutical composition of claim 7, wherein the polypeptide comprises amino acids:
 - 10 174-186 or 50-192 of UL7 (SEQ ID NO: 7);
 - 405-413 or 322-417 of UL25 (SEQ ID NO: 8);
 - 475-483 or 404-627 of UL26 (SEQ ID NO: 9);
 - 354-362 or 254-722 of UL46 (SEQ ID NO: 10);
 - 365-373 or 342-393 of US6 (SEQ ID NO: 11); or
 - 15 518-526 or 503-545 of US8 (SEQ ID NO: 12).
10. The pharmaceutical composition of claim 7, wherein the polypeptide is a fusion protein.
11. The pharmaceutical composition of claim 10, wherein the fusion protein is soluble.
12. The pharmaceutical composition of claim 7, further comprising an adjuvant.
- 20 13. A polynucleotide that encodes a polypeptide comprising an amino acid sequence consisting essentially of amino acids:

- 174-186 or 50-192 of UL7 (SEQ ID NO: 7);
- 405-413 or 322-417 of UL25 (SEQ ID NO: 8);
- 475-483 or 404-627 of UL26 (SEQ ID NO: 9);
- 354-362 or 254-722 of UL46 (SEQ ID NO: 10);
- 5 365-373 or 342-393 of US6 (SEQ ID NO: 11); or
- 518-526 or 503-545 of US8 (SEQ ID NO: 12).
14. A vector comprising the polynucleotide of claim 13.
15. A host cell transformed with the vector of claim 14.
16. A method of producing an HSV polypeptide comprising culturing the host cell of
- 10 claim 15 and recovering the polypeptide so produced.
17. An HSV polypeptide produced by the method of claim 16.
18. A pharmaceutical composition comprising the polynucleotide of claim 13 and a pharmaceutically acceptable carrier.
19. The pharmaceutical composition of claim 18, further comprising an adjuvant.
- 15 20. A recombinant virus genetically modified to express an amino acid sequence consisting essentially of:
- 174-186 or 50-192 of UL7 (SEQ ID NO: 7);
- 405-413 or 322-417 of UL25 (SEQ ID NO: 8);
- 475-483 or 404-627 of UL26 (SEQ ID NO: 9);

354-362 or 254-722 of UL46 (SEQ ID NO: 10);

365-373 or 342-393 of US6 (SEQ ID NO: 11); or

518-526 or 503-545 of US8 (SEQ ID NO: 12).

21. The recombinant virus of claim 20 which is a vaccinia virus, canary pox virus or
5 adenovirus.

22. A pharmaceutical composition comprising the virus of claim 20 and a
pharmaceutically acceptable carrier.

23. The pharmaceutical composition of claim 22, further comprising an adjuvant.

24. A method of producing immune cells directed against HSV comprising contacting
10 an immune cell with an antigen-presenting cell, wherein the antigen-presenting cell is
modified to present an epitope included:

174-186 or 50-192 of UL7 (SEQ ID NO: 7);

405-413 or 322-417 of UL25 (SEQ ID NO: 8);

475-483 or 404-627 of UL26 (SEQ ID NO: 9);

15 354-362 or 254-722 of UL46 (SEQ ID NO: 10);

365-373 or 342-393 of US6 (SEQ ID NO: 11); or

518-526 or 503-545 of US8 (SEQ ID NO: 12).

25. The method of claim 24, wherein the immune cell is a T cell.

26. The method of claim 25, wherein the T cell is a CD4⁺ or CD8⁺ T cell.

20 27. An immune cell produced by the method of claim 24.

28. A method of killing an HSV infected cell comprising contacting an HSV infected cell with the immune cell of claim 27.
29. A method of inhibiting HSV replication comprising contacting a herpes simplex virus with the immune cell of claim 27.
- 5 30. A method of enhancing secretion of antiviral or immunomodulatory lymphokines comprising contacting an HSV infected cell with the immune cell of claim 27.
31. A method of enhancing production of HSV-specific antibody comprising contacting an HSV infected cell in a subject with the immune cell of claim 27.
32. A method of enhancing proliferation of HSV-specific T cells comprising contacting
10 the HSV-specific T cells with an isolated polypeptide that comprises an epitope included in a UL7, UL25, UL26, UL46, US6 or US8 protein.
33. A method of inducing an immune response to an HSV infection in a subject comprising administering the composition of claim 7 to the subject.
34. A method of inducing an immune response to an HSV infection in a subject
15 comprising administering the composition of claim 18 to the subject.
35. A method of treating or preventing an HSV infection in a subject comprising administering the composition of claim 7 to the subject.
36. A method of treating or preventing an HSV infection in a subject comprising administering the composition of claim 18 to the subject.
- 20 37. A method of treating or preventing an HSV infection in a subject comprising administering an antigen-presenting cell modified to present an epitope included in aUL7, UL25, UL26, UL46, US6 or US8 protein to the subject.

38. A method of enriching a population of lymphocytes for T lymphocytes that are specific to a virus that attacks skin comprising:

- (a) obtaining peripheral blood mononuclear cells (PBMC) from a subject infected with the virus that attacks skin;
- 5 (b) isolating lymphocytes from the PBMC of (a) that express cutaneous lymphocyte-associated antigen (CLA); and
- (c) isolating CLA-positive lymphocytes from (b) that selectively kill cells infected with the virus that attacks skin;

10 whereby the CLA-positive lymphocytes isolated in (c) are the T lymphocytes specific to the virus that attacks skin.